



# Importance of the Dynamic in Head and Neck Trauma: A Case Report and Review of Literature

Collura Simone\* and Andreoli Giovanni

Department of Molecular and Translational Medicine, University of Brescia, Italy

\*Corresponding author: Collura Simone, Department of Molecular and Translational Medicine, University of Brescia, Italy

Received: 📅 November 09, 2020

Published: 📅 December 13, 2020

## Abstract

**Introduction:** The dynamic is one of the most important aspect to evaluate in a trauma even if the first clinical findings are poor. Sometimes it can be the most relevant aspect.

**Case report:** Here we report a case of a 73 year-old woman who was invested by a car running about 30 km/h. The patient was projected a few meters away. There were contusions of the right hemithorax, the left leg and particularly of the right orbital region with hyperextension of the neck. The CT scan revealed fracture of the orbital and maxillary bones on the right side with frontal acute subarachnoid hemorrhage. There were also fractures of the posterior arch of C1 and a complex fracture of C2 without any neurological sign. The patient was then recovered in our hospital and underwent fixation of the first three cervical vertebrae three days after. Ten days after surgery the patient was discharged in good health with perfect neurological exam.

**Discussion:** The evaluation of the dynamic is really important in every trauma. Even where the clinical findings are poor, careful attention must be taken to dynamic like in our case. Particular dynamic features of the trauma can give indication to CT scan of the head and neck. Some clinical scales can be significant and very useful when evaluating the risk of cervical vertebral lesions with eventual indication to radiological exams.

**Conclusion:** When evaluating a trauma, attention to dynamic is strictly important. The physician must keep in mind appropriate and validated criteria for evaluation of the trauma in order to choose as soon as possible the best clinical process for the patient.

## Introduction

The management of trauma has evolved significantly in the last past decades [1]. In its improvement a main role has been played by the introduction of validated criteria to evaluate the trauma in its clinical and dynamic aspects.

Dynamic of trauma is relevant and it is more significant in the first evaluation when the clinical findings can be poor.

## Case report

We report a case of a 73 year-old female patient affected by hypertension and diabetes type II both in oral and insulin therapy. The patient was taking aspirin for preventive purposes. While crossing a street during the evening the patient was invested by a car running 30 km/h. The patient was projected about three meters away with trauma of the right hemithorax, the left leg and

particularly of the right orbital region with hyperextension of the neck.

The patient was always conscious and was brought to our Emergency Department. At the first evaluation the patient was hemodynamically stable with normal values of heart rate, blood pressure and respiratory rate. GCS was 15. The only clinical important sign was a right raccoon eye.

The radiological exams of thorax and abdomen were negative. In particular the patient underwent at first a radiography of the chest and in a second time a CT scan of thorax and abdomen. The radiological exams of the extremities found only a fracture of left fibula. Indeed the CT scan of the head found a complex fracture of the orbital and maxillary bones on the right side with a right frontal acute subarachnoid hemorrhage of about 1 cm in size. The CT scan

of the cervical column demonstrated a fracture of the posterior arch of the first cervical vertebra and a complex fracture of the second one. There were no particular findings at the blood exams. The patient was also evaluated by the anesthesiologist with no indication for recovery in the Intensive Care Unit.

Then the patient was recovered in the Unit of Neurosurgery and three days later she underwent the fixation of the first three cervical vertebrae. During surgery also a ganglionectomy of C2 was performed. No significant surgical blood loss was recorded and the general anesthesia was well tolerated by the patient. After surgery the patient was recovered for a day in the Intensive Care Unit and then she came back to the Neurosurgical Unit. In the post-operative period hypernatremia was found, successfully treated with parenteral infusions. Ten days after surgery the patient was discharged in good health with a perfect neurological exam.

Two months after hospital discharge the patient underwent a CT scan of head and neck which demonstrated a normal healing of the previous lesions. At two years after the traumatic event the patient is in good health with no neurological sequelae. Nowadays the patient is able to attend to all her daily activities such as before the trauma.

## Discussion

Age is a risk factor for trauma [1]. About 30% of minor traumas of the elderly are at risk for major lesions. Road accidents [2,3] are one of the most relevant traumatic cause of death between 65 and 74 years old and the second one over 75 years. In the elderly the pedestrian investment is one of the most common situation especially for women.

So this kind of trauma is really important for community both because of health problems and costs for society. The dynamic of trauma is very significant in the evaluation of the possible lesions. Even when the clinical findings are poor, an accurate anamnesis with particular reference to the features of the accident scene is really important. Features of major trauma are rolling by a vehicle, ejection from a vehicle, precipitation from a height more than 3 meters, presence of a dead in the same vehicle, investment of a pedestrian by a car or a truck especially if with projection.

In our case the dynamic can be considered important both because the patient was a pedestrian hit by car and there was projection. Even the velocity of the vehicle was significant in this kind of dynamic. In the evaluation of head trauma the first thing to assess is the Glasgow Coma Scale: if normal (15) the indication to CT scan is to be taken according to the features of patient such as age, anticoagulant or antiplatelet therapy. Otherwise with GCS inferior to 15 CT is mandatory. There are some cases in which assumption of alcohol or drugs [4] can make difficult the evaluation of GCS and so in such cases CT is also recommended.



Figure 1: Frontal acute subarachnoid hemorrhage.



Figure 2: Fracture of the skull.

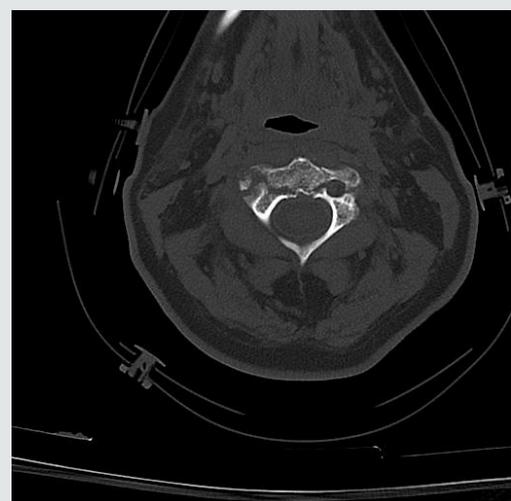
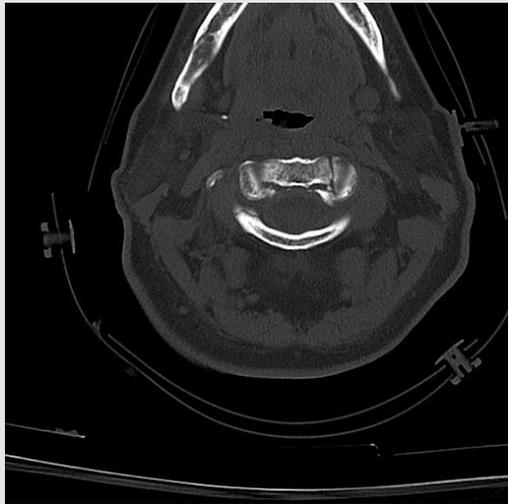


Figure 3: Fracture of C1.

Other factors [1] leading to the choice of performing a CT scan [5-9] of the head are: presence of retrograde amnesia lasting more than 30 minutes, age > 65 years old, more than two episodes of vomit, assumption of anticoagulant or anti platelet therapy, suspect signs of skull fractures such as hemo tympanum, raccoon eyes and Battle's sign, relevant dynamic such as described before, disorientation after trauma (Figures 1-4).



**Figure 4:** Fracture of C2.

In our case GCS at the arrival to the Emergency Department was 15 and the indication to the CT scan [5] was taken particularly because of the dynamic of the event, in taking of aspirin, age and presence of raccoon eye. In the evaluation of neck trauma [10-13] the first thing to evaluate are the presence of cervical pain, contracture and tenderness. In our case no particular pain or contracture was found during the first clinical evaluation and the neurological exam was normal. Only the dynamic of the trauma and the coexistence of the head trauma with hyperextension of the neck suggested radiological exams of the cervical column.

Usually the importance of neck trauma and consequently the indication to radiological exams are established through some clinical scales such as Canadian C-spine rules and Nexus criteria. According to Canadian C-spine rules [10,11, 13] age > 65 years old and presence of a dangerous mechanism (fall from 5 stairs, axial load to the head, high-speed motor vehicle collision, rollover, ejection,...) such as in our case are indications to radiological study of the cervical spine. On the other side Nexus [11] criteria are not reliable with elderly patients, such as in the present case. A good knowledge of the dynamic event and of the criteria and scales here cited are very useful for a prompt and correct management of trauma.

## Conclusion

It's really important to know every aspect of the dynamic of the event in the management of trauma. Validated scales and criteria are really useful to identify major traumas even if the first clinical findings are poor. The correct knowledge of these criteria can guarantee a prompt and perfect management of the traumatic patient. The head trauma in the elderly is a frequent problem in community everyday life and this makes the correct management of this kind of trauma even more relevant.

## References

1. Osvaldo G, Gordini G, Nardi G, Sanson G (2012) Trauma care. Elsevier.
2. Liu G, Chen S, Zeng Z, Cui H, Fang Y, et al. (2018) Risk factors for extremely serious road accidents: Results from national Road Accident Statistical Annual Report of China. *PLoS One* 13(8): e0201587.
3. Iaccarino C, Carretta A, Nicolosi F, Morselli C (2018) Epidemiology of severe traumatic brain injury. *J Neurosurg Sci* 62(5): 535-541.
4. Carfora A, Campobasso CP, Cassandro P, Petrella R, Borriello R (2018) Alcohol and drugs use among drivers injured in road accidents in Campania (Italy): A 8-years retrospective analysis. *Forensic Sci Int* 288: 291-296.
5. Kuo KW, Bacek LM, Taylor AR (2018) Head Trauma. *Vet Clin North Am Small Anim Pract* 48(1): 111-128.
6. Bonhomme V, Hans P, Brichant JF (2006) Head trauma. *Acta Anaesthesiol Belg* 57(3): 239-247.
7. Giofrè-Florio M, Murabito LM, Visalli C, Pergolizzi FP, Famà F (2018) Trauma in elderly patients: a study of prevalence, comorbidities and gender differences. *G Chir* 39(1): 35-40.
8. Peeters N, Lemkens P, Leach R, Gemels B, Schepers S, et al. (2016) Facial trauma. *B-ENT* 26(2): 1-18.
9. Perry M, Morris C (2008) Advanced trauma life support (ATLS) and facial trauma: Can one size fit all? Part 2: ATLS, maxillofacial injuries and airway management dilemmas. *Int J Oral Maxillofac Surg* 37(4): 309-320.
10. Michaleff ZA, Maher CG, Verhagen AP, Rebbeck T, Lin CW (2012) Accuracy of the Canadian C-spine rule and NEXUS to screen for clinically important cervical spine injury in patients following blunt trauma: A systematic review. *CMAJ* 184(16): E867-876.
11. Stiell IG, Clement CM, McKnight RD, Brison R, Schull MJ, et al. (2003) The Canadian C-spine rule versus the NEXUS low-risk criteria in patients with trauma. *N Engl J Med* 349(26): 2510-2518.
12. Kanwar R, Delasobera BE, Hudson K, Frohna W (2015) Emergency department evaluation and treatment of cervical spine injuries. *Emerg Med Clin North Am* 33(2): 241-282.
13. Ngatchou W, Beirnaert J, Lemogoum D, Bouland C, Youatou P, et al. (2018) Application of the Canadian C-Spine rule and nexus low criteria and results of cervical spine radiography in emergency condition. *Pan Afr Med J* 30: 157.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here: [Submit Article](#)

DOI: [10.32474/JCCM.2020.02.000143](https://doi.org/10.32474/JCCM.2020.02.000143)



### Journal of Clinical & Community Medicine

#### Assets of Publishing with us

- Global archiving of articles
- Immediate, unrestricted online access
- Rigorous Peer Review Process
- Authors Retain Copyrights
- Unique DOI for all articles